

## NOVEL EXTRACTION AND PHYTOCHEMICAL SCREENING OF *ALSEODAPHNE SEMECARPIFOLIA* NEES. (LAURACEAE)

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### ABSTRACT

The present work deals with a novel extraction method of plant metabolites from the leaves of the *Alseodaphne semecarpifolia*. This extraction method used the solvents like ethanol, alkali (10% NaOH), acid (4N HCl) and ether. The various extracts were screened phytochemically for the presence of secondary metabolites like phenolics, alkaloids, flavonoids, glycosides, tannins, saponins etc.

**Keywords:** *Alseodaphne semecarpifolia*, Extraction using alkali, Acid, Ether, Phytochemical screening.

### INTRODUCTION

Medicinal and aromatic plants act as a well spring of traditional systems of medicine, herbal drugs, nutraceuticals, food supplements, folk medicines, pharmaceutical intermediates and new chemical entities for synthetic drugs. Sweeteners, flavour, fragrances, and a number of health care related products. These

natural products are obtained a systematic extraction and chromatographic separation.

*Alseodaphne semecarpifolia* belongs from Lauraceae (Laurel family) it is commonly known as Nelthare; in Tamil Arambamaram, Kanaippirandai. *A.semecarpifolia* is a large evergreen tree up to 18 m tall, found in peninsular India and Srilanka.<sup>1</sup> (Fig.1)

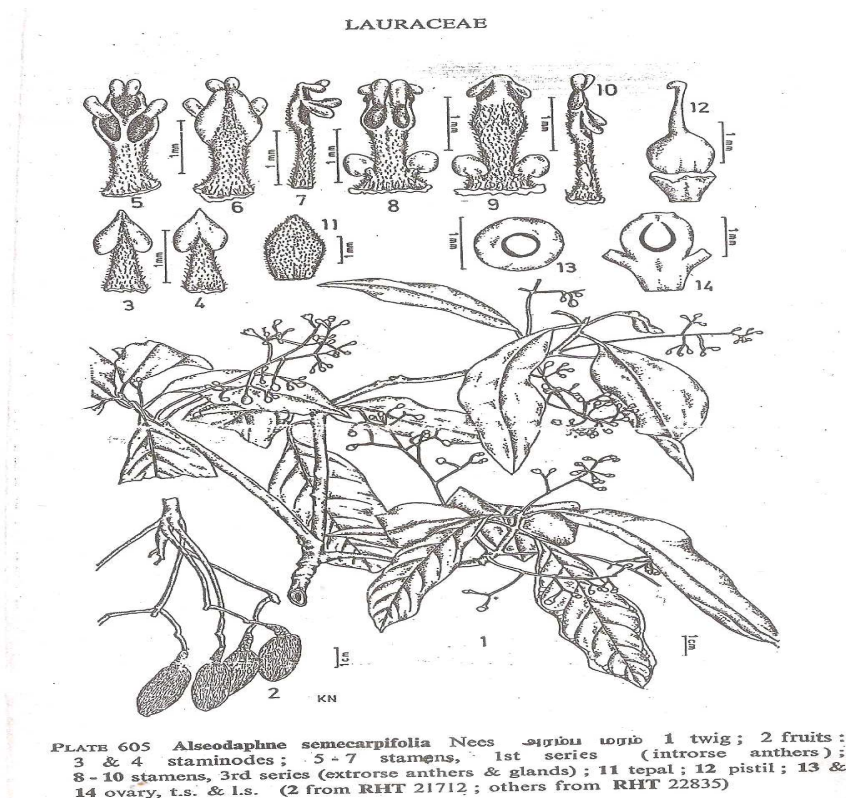


Fig. 1: *Alseodaphne semecarpifolia*

*A.semecarpifolia* in ethno veterinary practices in India the stem bark is used for Rinderpest disease, dysentery in cattles and leach bite<sup>2,3,4,5,6</sup>. *Alseodaphne* species have been reported to contain bis-benzylisoquinolines<sup>7</sup>, oxobis-benzylisoquinolines<sup>8</sup>, N-Cyanomethylnorboldine<sup>9</sup>, dihydroisoobtusilactone, dihydroobtusilactone, 3-epilitsenolide, 3-epilitsenolide, alseodafuranone<sup>10</sup>. In the present study, the various ether extracts of

*A.semecarpifolia* were screened phytochemically for the presence of some secondary metabolites. In order to find out the active principles like steroids, phenolics, alkaloids, flavonoids, tannins, saponins, glycosides etc. Here in we report efficient ether extraction method and phytochemical studies of *A.semecarpifolia*. The active ingredients are the main effective compounds of medicinal plants, the presence and quantity vary from one plant to the other.

## MATERIAL AND METHODS

### Chemical and reagents

The solvents and the reagents were purchased from Merck. They were used without further purification.

### Plant Material

The leaves of *Alseodaphne semecarpifolia* were collected from the evergreen forests, Kolli hills, Eastern Ghats of Tamil Nadu, India. They were identified and authenticated by the Rapihent herbarium of St. Joseph's College (Autonomous), Tiruchirappalli, Tamil Nadu, India.

### Preparation of extracts

The shade-dried leaves of *A. semecarpifolia* (1kg) were extracted, with 80% ethanol (4x500) for 3-5 days subjected to cold percolation method. The alcoholic extract was concentrated in a flash evaporator. The systematic extraction procedure is given in Scheme below (Fig 2).

### Phytochemical screening

Phytochemical analysis of different ether extracts and the aqueous extracts were subjected for preliminary phytochemical screening<sup>11, 12, 13</sup>, the details of the analysis, given in Table 1.

**Table 1: Phytochemical analysis of different ether layers from ethanolic leaves extract *A. semecarpifolia***

	Metabolites	Test (s)	Observation	EI	EII	EIII	EIV	Aq.
1	Alkaloids	Dragondroffs reagent	Orange colour	-	-	-	+	-
2	Glycosides	Anthrone + H <sub>2</sub> SO <sub>4</sub> +Heat	Purple or green	-	-	-	-	+
3	Carbohydrates	Molish's reagent+ conc. H <sub>2</sub> SO <sub>4</sub>	Purple colour	-	-	-	-	+
4	Phytosterols	LiebermannTest	Bluish green	+	-	+	-	-
5	Proteins & Amino acids	Biuret test	Violet colour	-	-	-	-	-
6	Saponins	Water + shaking	Formation of honey comb like froth.	-	-	-	-	+
7	Flavonoids	Shinoda's test	Red colour	-	+	-	-	+
8	Fixed oils & Fats	Spot test	Stains appear after drying	+	-	+	-	-
9	Gums/Mucilage	water	No thickening of the substance	+	-	+	-	-
10	Phenolics/ Tannins	Extract+FeCl <sub>3</sub>	Intense colour	-	+	-	-	-

EI =Ether layer 1, EII =Ether layer 2, EIII = Ether layer 3, EIV= Ether layer IV, Aq=Aqueous - = absent, + = present

## RESULTS AND DISCUSSION

The present phytochemical investigation of *A. semecarpifolia* [Table 1], showed the presence of basics compounds like alkaloids in the EIV layer. When the ethanolic extract was treated with 4 N HCl and further extracted with ether, the basic compounds were retained in the acidic aqueous layer. The ether layer took out the other polar compounds while neutralizing the acidic aqueous layer with alkaline 10% NaOH solution the basic compounds were liberated. Then, these basic compounds were extracted using ether. Thus the ether layer IV was analyzed to have alkaloid. The acidic compounds like flavonoids, phenolics and other acidic non-glycoside moiety (aglycone) were present in the ether layers II. When the ethanolic extract was treated with 10% NaOH solution and further extracted with ether, the acidic compounds were retained in the basic aqueous layer. The ether layer took out the other polar compounds while neutralizing the basic aqueous layer with 4 N HCl the acidic compounds was liberated. Then, these acidic compounds were extracted using ether. Thus the ether layer II was analyzed to have flavonoid and phenolics. The compound like Phytosterols, triterpenoids, volatile oil, gums/Mucilage was present in the EI and EIII layers. Highly polar compounds like saponins, glycosides and tannins were present in the aqueous.

## CONCLUSION

The present study revealed that biologically active chemical substances could be extracted selectively by applying the fundamental concept of acid-base reaction. The basic chemical compounds like alkaloids were extracted through the acidic solution and the acidic chemical compounds like flavonoid and phenolics extracted through the alkaline solution. The other neutral polar compounds like quinones; coumarins were extracted using neutral polar solvents.

## REFERENCE

- Mathew KM, The Flora of Tamilnadu Carnatic, 1983, Vol III Rapinant Herbarium, Trichirappalli, India.
- Gamble JS, Flora of Presidency of Madras. 1993, 2, 1226. (re. ed)
- Saldanha, Flora of Karnataka. 1996, 1, 59.
- Sasidharan, Biodiversity documentation for Kerala. Flowering Plants. 2004, 6, 395.
- Harsha VH, Shripathi V, Hegde GR. Indian J. of Traditional Knowledge. 2005, 4(3), 253-258.
- Karupusamy S, Natural product Radiance. 2007, 6(5), 436-442
- Mukhtar MR, Zahari A, Nafiah MA, Hadi A, Thomas AH, Hiroko NF, Morita H, Litaudon M, Ahmad K. 3', 4'-Dihydrostephasubine, A New Bisbenzylisoquinoline from the Bark of *Alseodaphne corneri*. Heterocycles, 2009, 78, 2571-2578.
- Mukhtar MR, Nafiah MA, Ahmad K, Thomas NF, Kazumasa Z, Morita H, Litaudon MA, Hadi A.  $\alpha'$ -Oxoperakensimine A-C, New Bisbenzylisoquinoline Alkaloids from *Alseodaphne perakensis* (Gamble) Kosterm. Heterocycles. 2009, 78, 2085-2092.
- Mohd Azlan Nafiah, Mat Ropi Mukhtar, Hanita Omar, Kartini Ahmad, Hiroshi Morita, Marc Litaudon, Khalijah Awang, N-Cyanomethylnorboldine: A New Aporphine Isolated from *Alseodaphne perakensis* (Lauraceae) Molecules. 2011, 16, 3402-3409.
- Shoei-Sheng Lee, Show-Mei Chang, and Chung-Hsiung Chen, Chemical Constituents from *Alseodaphne andersonii*, J. Nat. Prod. 2001, 64 (12), 1548-1551.
- Harborne JB. Phytochemical Methods. A Guide to Modern Techniques of Plant Analysis, Chapman and Hall, London., 2005, 182-189.
- Persinos GJ and Quimby MW, Nigerian Plants III. Phytochemical screening for alkaloids, saponins, tannins. J. Pharm.Sci. 1967, 56 (2) 1512.
- Peach K and Tracey MV, Modern Methods in Plant Analysis, 1955, 4.